State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

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MEMORANDUM

TO: Steven Byrnes, Technical Coordinator, EES

THROUGH: Linda Cullen, Unit Supervisor, ETRA

FROM: Nancy Hamill, Research Scientist, ETRA NEH 3/16/09

SUBJECT: Review of *Hackensack River Study Area Remedial Investigation Report – Revision 1, December 2008,* and the response to comments letter, December 19, 2008 (M. Brourman to C. Kanakis and F. Faranca)

Background Summary

The referenced documents were prepared by Arcadis BBL, Inc., pursuant to NJDEP's August 5, 2008 Notice of Deficiency (NOD) and comments on the *Hackensack River Study Area Remedial Investigation Report,* June 2007. The objective of the investigation is to collect adequate data to preliminarily characterize the nature and extent of constituents in the Hackensack River Study Area (HSRA), which will support the Screening Level Ecological Risk Assessment (SLERA) and Baseline Ecological Evaluation (BERA). The HRSA encompasses the 2.7 mile portion of the river adjacent to the Standard Chlorine Chemical Company, Tierra Solutions (former Diamond Shamrock), and Beazer (former Koppers Seaboard) sites. The study included 56 sample locations (37 in-river, 19 mudflat) over 27 transects. All locations had samples collected from the 0-.5' interval; 36 samples were collected from the 0.5 – 2' interval and 20 samples were collected from the 2-4' interval. Three deep cores were collected and continuous intervals were sampled to a depth of 12 feet. Samples were analyzed for chemical, radiochemical, and physical parameters; chemical analysis was consistent with the Lower Passaic River Project. In the SLERA, contaminants of potential ecological concern (COPECs) were conservatively determined via comparison of data with sediment quality guidelines. ETRA has reviewed the December 19, 2008 response to comment letter and the corresponding RIR revisions that were referenced in certain comments in accordance with N.J.A.C.7:26E and other State and Federal guidances; notes from the October 22, 2008 meeting were also consulted. The comments are addressed in the order as they appear in the letter.

Comment 1. Acceptable – a new section, *7. Scope of Future Work*, was created to address this comment. As agreed to at the October meeting, this section identifies data gaps and presents an overview of the approach to the BERA.

Comment 2. Acceptable - Section 5 of the revised RI has been enhanced with a more detailed discussion on data trends; information on non RI data has also been added to the discussion as well as the Section 5 figures. Additionally, the addition of the new set of Section 4 figures (sample concentration maps) greatly facilitates data evaluation.

Comment 3. Acceptable – The mudflats not sampled in the HRSA are intended to be sampled for the Supplemental RI/BERA. Data from Mudflat 11 collected as part of the former Koppers Seaboard Site IRAW Pre-Design Study will also be included.

Comments 4, 5, 6, 7, 8, 9. Acceptable.

Comment 10. The ~~PRG presents justification~~ for not concurring with NJDEP's recommendation to use 3.6 ppt 2,3,7,8-TCDD from the NOAA Screening Quick Reference Tables (~~SQuiRT) as the sediment~~ screening criterion, and states that, as agreed to at ~~the October~~ meeting, the SLERA will not be revised and the criterion will be selected for the BERA. ETRA recognizes this agreement, but reaffirms the NOAA SQuiRT value is within the range of generally available criteria for 2,3,7,8-TCDD.

There are no firmly established sediment screening criteria for dioxins, however, levels less than 10 ppt are generally cited by regulatory agencies for aquatic ecosystem health and protection. Various groups (regulatory agencies and others) have developed sediment guidelines using a variety of methods, for example, the equilibrium partitioning approach, tissue residue-based guidelines, background considerations, etc. The method selected depended on the site-specific goals and/or the protection of specific endpoints of concern, such as fish, birds, mammals, or the benthic community. Guidelines derived for dredge spoil disposal/management at off-shore locations have typically equated to sediment levels in the low ppt range (1-10 ppt).

The USEPA published "Interim Report on Data and Methods for Assessment of 2,3,7,8-Tetrachlorodibenzo-p-dioxin Risks to Aquatic Life and Associated Wildlife," March 1993. Through this report the USEPA presents a review of available research and methods for assessing dioxin risks to ecological receptors. For sediments, two risk level categories are presented. The first category is referred to as Low Risk and represents the highest concentration that is unlikely to cause significant effects to sensitive organisms. The second category is referred to as High Risk to sensitive organisms and represents the lowest exposure concentration that will likely cause severe effects. The Low Risk sediment levels are 60 ppt for the protection of fish, 2.5 ppt for the protection of mammalian wildlife, and 21 ppt for the protection of avian wildlife. The High Risk sediment levels are 100 ppt for the protection of fish, 25 ppt for the protection of mammalian wildlife, and 210 ppt for the protection of avian wildlife. **For State cases**

where dioxin is present in sediments, 2.5 ppt, the Low Risk sediment screening criterion for the protection of mammalian wildlife, is routinely used.

ETRA considers the sediment criteria used for the Lower Passaic River Restoration Project Focused Feasibility Study[2] to be applicable to the HRSA. The USEPA Region 5 screening criterion of 0.12 ppt was used for 2,3,7,8 TCDD. The sediment Preliminary Remediation Goals (PRGs) are 3.2 ppt for the protection of the benthos and 2.5 ppt for the protection of wildlife.

Comments 11. Acceptable – The supplemental information in Section 5.4.1 appropriately revises the Conceptual Site Model to specifically address contaminant migration from the three peninsula sites.

Comments 12 and 13 – Acceptable.

ETRA Recommendations

ETRA concurs with the PRG recommendation to address comments not addressed via RI revisions in the supplemental RI and BERA.

Please contact me if you have any questions at 609-633-1353.

cc Chris Kankis
David Barsky
Pamela Lange
Reyhan Merhan, NOAA
Tim Kubiak, USFWS
Chuck Nace, USEPA

References:

1. NOAA SQuiRT Tables, Updated February 2004, available at <http://response.restoration.noaa.gov/cpr/sediment/squirt/squirt.html>

2. Lower Passaic River Restoration Project, Appendix B. Development of Preliminary Remediation Goals. June 2007. Battelle Corporation.